1. In total, there were 9684 total transactions and 18,871 items bought. This is just under 2 items bought per transaction. This took place over a time period of a little over 5 months. The most popular items included coffee at 4526 purchases, bread at 3094 purchases, tea at 1349 purchases, cake at 983 purchases, and pastries at 814 purchases. Other items, which will be mentioned in the second question, included Coke at 185 purchases, mineral water at 136 purchases, sandwiches at 771 purchases, soup at 342 purchases, hot chocolate at 596 purchases, and Jammie Dodgers at 125 purchases.

A screenshot of a computer

Description automatically generated

Support is the fraction of transactions that contain both X and Y. Confidence measures how often items in Y appear in transactions that contain X. Lift is how likely item Y is purchased when item X is purchased, while controlling for how popular item Y is. I used a support value of 0.0025 and a confidence value of 0.2 to look for association rules. Even with coffee removed, bread and tea are very common which makes them very common on the right-hand side of these association rules. Since of how common they are, they will have lower lift values compared to other items. Out of the 40 association rules, I picked the top 5 according to lift. The first rule was coke and a sandwich. Sandwiches are the most commonly bought meal here and Coke is the most commonly bought soda, so them being together makes sense. The second rule was a water and a sandwich. Again, this makes sense as sandwiches are popular at this shop and water is another common drink of choice. The third rule was coffee, soup, and sandwich. Soups compliment sandwiches very well, and I think coffee joins them simply because of how commonly it is purchased at the shop. The fourth rule is coffee, hot chocolate, and cake. I think this rule is the least obvious. I wouldn’t think that hot chocolate and cake would have such a strong connection, and again I think coffee joins in because of how frequently it is bought. Lastly, we have Jammie Dodgers and cake which implies people coming together in groups of 2 or more to get some sweets.